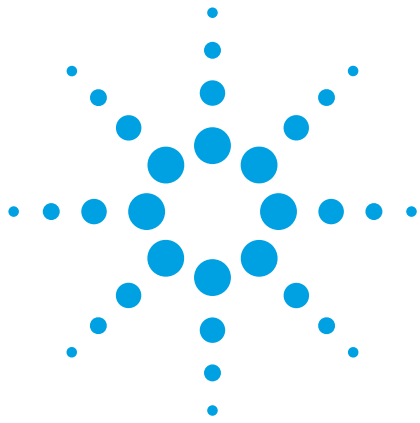
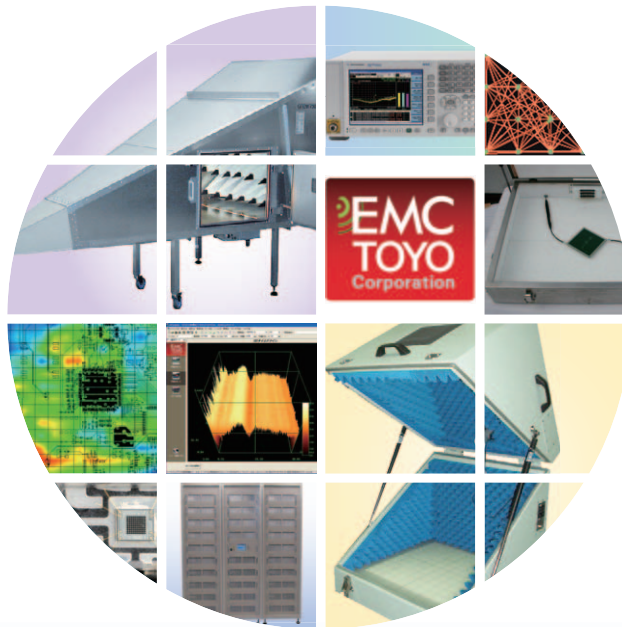




**Agilent Technologies
TOYO Corporation
Solutions Partner Catalog
- EMC Measurements -**



Solutions



Agilent Technologies

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Solutions

About TOYO Corporation

TOYO Corporation, as an expert in measurement technology, has been proactively breathing fresh life into the sunrise industry such as energy and environment, along with its mainstream business including electromagnetic interference measurement and communication measurement. Striving for a name trusted in the market innovation technology, not only a measurement technology provider, we, at TOYO, redouble our efforts to expand the laboratories, impart technical knowledge, improve the training facilities and enrich technical training for employees.

In recent years, TOYO has been delivering carefully needs-matched solutions to each customer through self-developed system products and will be committed to promptly catering to the demand for technological innovation with a reinforced development group.

A composite image. On the left, a low-angle shot of a modern glass skyscraper reaching towards a clear blue sky. On the right, several pieces of electronic measurement equipment are displayed, including a large rack-mounted system, a smaller benchtop unit with a screen showing a waveform, and another benchtop unit below it.

“Measurement” technology constitutes the mainstay of all businesses - this is what TOYO believes.

Technology Interface Center

EMI Measurement System

- CISPR-approved system -

EMI measurement system best suited to customer needs

Overview

The electronics industry moves toward the digitalization and mobilization of equipment with higher density packaging, making the determination of noise source and EMC control more challenging.

There are increasing demands to expand upper limited frequency, adhere to frequently-revised standards, and acquire and store data on more complex noise to the greatest extent possible.

TOYO's 30 years of technical expertise has trickled down to its automatic systems based on impressive records of supplying hundreds of systems to various businesses from public test laboratories through commercial EMC test houses.

TOYO's time-proven systems offer the user a wide choice of options, from full compliance fully-automatic measurement to preliminary simplified measurement.

Basic measurement functions

- Capable of acquiring spectrum and QP detector measurement with a single click.
- Endowed with functions effective for manual measurements.
- Capable of exporting data.

Software

EP7 Series (3D display with a detailed noise analysis function)

- EP7/RE type: Radiated noise weighting and measurement software
- EP7/CE type: Terminal noise weighting and measurement software

EP5 Series (With a standard noise analysis function)

- EP5/RE type: Radiated noise measurement software
- EP5/CE type: Terminal noise measurement software
- EP5/RFP type: Noise power measurement software
- EP5/RSE type: Radiated spurious emission measurement software

Applicable standards

Consumer product standards

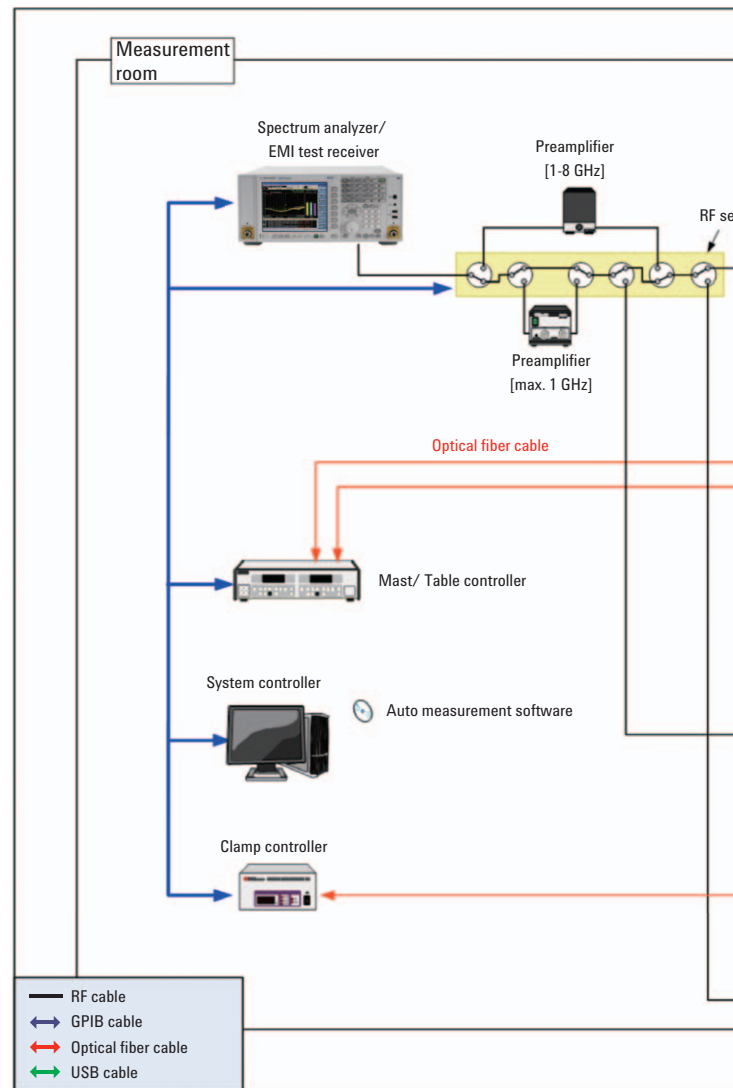
- CISPR
- EN
- FCC
- VCCI

Automotive standards

- 2004/104/EC
- SAE
- CISPR25
- JASO

Wireless Application standards

- TS51.010-1, TS34.121 (3GPP)
- Cellular phones (GSM, WCDMA)
- EN300 328, EN301 893 (ETSI)



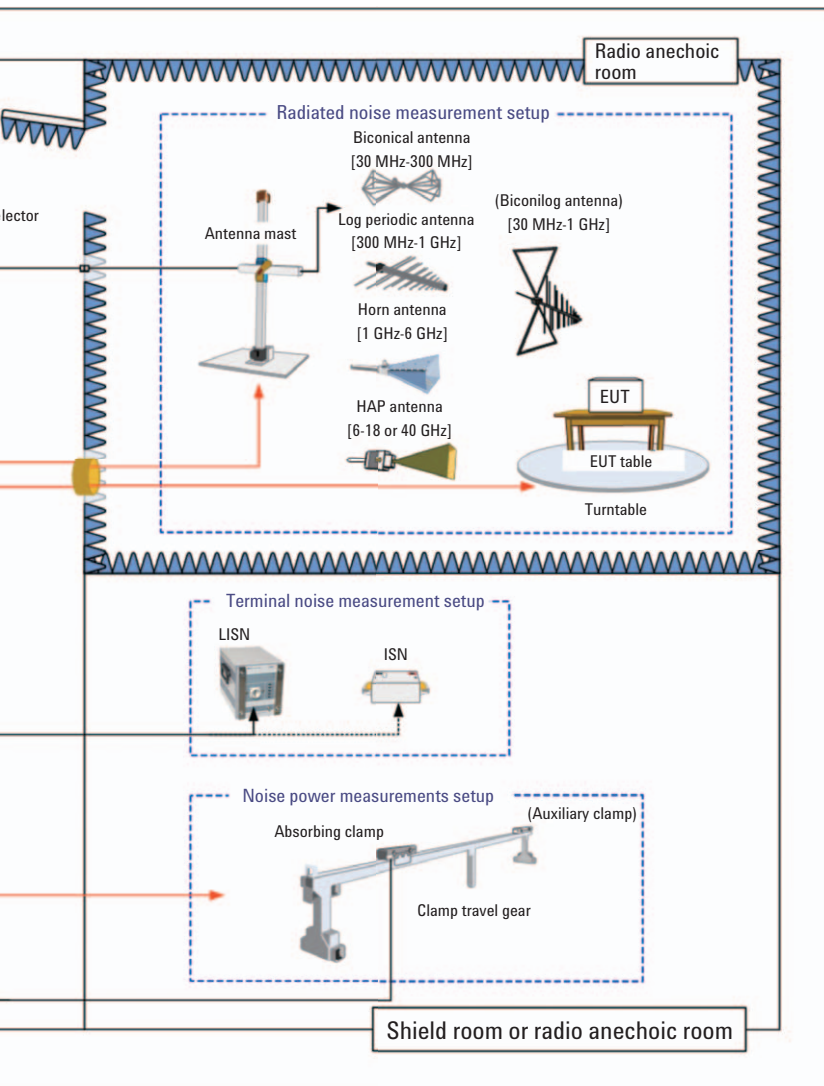
CISPR-compliant EMI test receiver with an integrated preselector



N9038A MXE EMI receiver

Frequency: 20 Hz – 8.4/26.5 GHz

EMI Measurement System TS9949 Series



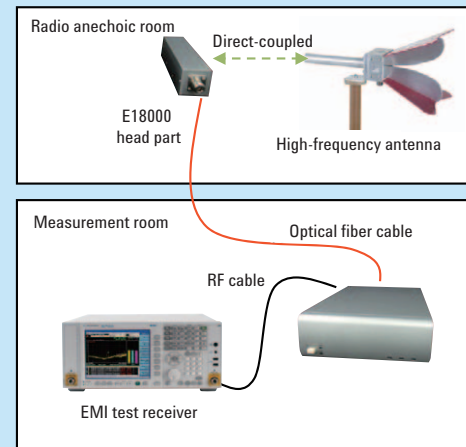
High-frequency light converter E18000 – E6000

Converting from coaxial cables to optical fiber

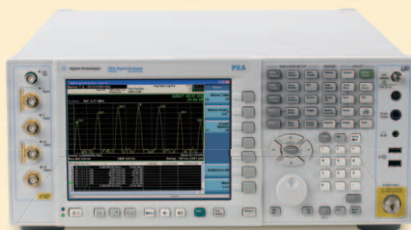
E18000 – E6000 converters are designed to transmit RF signals captured by an antenna in the form of light energy. Fiber-optic transmission offers low loss and excellent noise tolerance as compared with coaxial cables, realizing a high sensitivity radiant emission measurement system.

Features

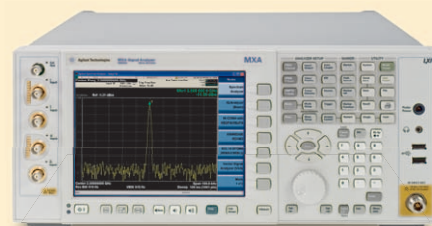
- Frequency range Model E18000: 1 G-18 GHz
Model E6000: 30 M-6 GHz
- Capable of highly-sensitive measurement by low-loss transmission
- Ideally suited for switching the EMI measurement transmission line with excess of 1 GHz.
- Long transmission distance: Min. 100 meters



Pre-compliance spectrum analyzer X Series



N9030A PXA signal analyzer
Frequency: 3 Hz – Max. 50 GHz
FCC standard (1-40 GHz)-compatible model



N9020A MXA signal analyzer
Frequency: 20 Hz – Max. 26.5 GHz
CISPR standard (Min. 1 GHz)-compatible model

TEM-wave Large-bandwidth Transmission Line System G-CELL

Designed for EMI measurement and analysis and assessment of radiated immunity test

Overview

TOYO's G-CELL is a cubic cell upgraded from TEM CELL, enabling easy radiated EMI measurement and immunity test of EUTs in the transmission line installed on the floor.

User-friendly G-CELL is favorable for immunity control and preliminary measurements before authentication tests in a radio anechoic room and open site.



Features

- Capable of easy EMI measurement with the spectrum analyzer.
- Enables radiated immunity test assuring consistency.
- Large opening design allowing easy EUT installation.
- Customizable power/signal line filters

Applications

- Radiant emission measurement
- Radiant immunity test

Software

- EP5/ME type: Simplified EMI measurement software
- IM5/RS type: Radiated immunity test software

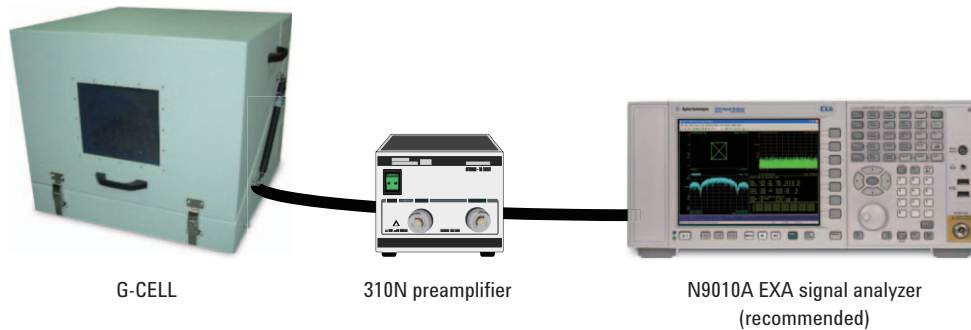
Specifications

- Frequency range: 10 k-1 GHz (2 GHz)
- Max. input power: 150 W (Type N connector)
- Dimensions: 70×70×70 cm (protrusion excluded)
- Applicable EUT size: 40×40×40 cm
- Shielding performance: Min. 70 dB



G-CELL

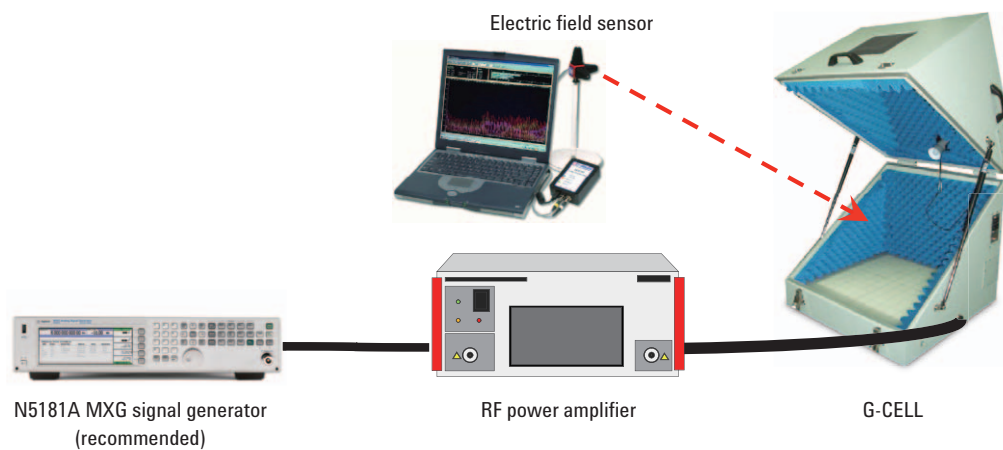
Connection diagram for radiant emission measurement



Standard components

Model	Equipment
G-CELL	TEM-wave large-bandwidth transmission line system
EP5/ME	Simplified EMI measurement software
N9010A EXA	Signal analyzer (9 k-3 GHz)
310N	Preamplifier
	50 Ω termination
	Computer, a set of cables (RF, GPIB)

Connection diagram for radiated immunity test



Standard components

Model	Equipment
G-CELL	TEM-wave large-bandwidth transmission line system
IM5/RS	Radiated immunity test software
N5181A	Signal generator (100 k-3 GHz)
	power amplifier
	Electric field sensor
	50 Ω termination
	Computer, a set of cables (RF, GPIB)

GTEM CELL

Excellent for analysis and assessment of EMI and immunity control

Overview

Our GTEM CELL is apt for EMC applications, antenna/ magnetic field probe and cellular phone tests in tandem with an upgrade frequency band from TEM (Transverse Electro Magnetic) CELL. The extended frequency band also lends itself to part sorting and measurements.

Features

- Stable shielded environment for EMI measurement and immunity test
- Compliant with the IEC/EN61000-4-20 and FCC ANSI C63.4 standards.
- Designed for broad spectrum (DC-20 GHz).
- Offers a rich lode of GTEM CELL models (septum height ranging from 250 mm to 2000 mm)
- Outstanding VSWR over the entire frequency band
- Customizable power/signal line filters

Software

- EP5/ME type: Simplified EMI measurement software
- IM5/RS type: Radiated immunity test software

Applications

- Radiant emission measurement
- Radiant immunity test



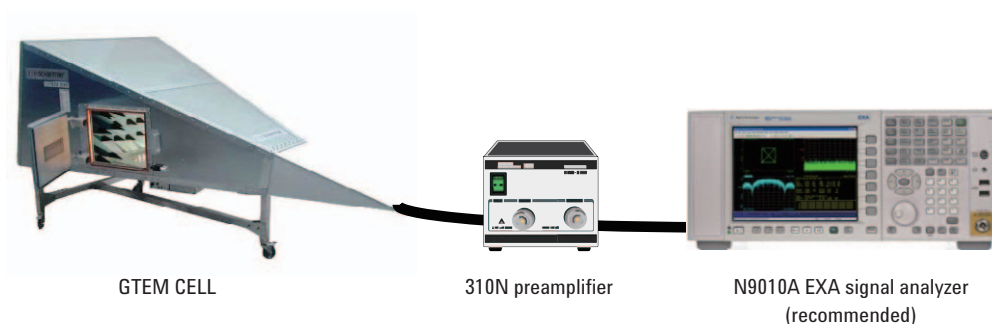
GTEM CELL

Specifications

	GTEM250	GTEM500	GTEM750	GTEM1000
Septum height (mm)	250	500	750	1000
Dimensions (m)	1.25×0.65×0.45	2.95×1.48×1.61	3.95×2.02×1.95	4.95×2.54×2.30
Dimensions of test product (m)	0.15×0.15×0.08	0.30×0.30×0.15	0.45×0.45×0.22	0.60×0.60×0.30
Max. input power (w)	50 W	100 W	200 W	1000 W

	GTEM1250	GTEM1500	GTEM1750	GTEM2000
Septum height (mm)	1250	1500	1750	2000
Dimensions (m)	5.95×3.06×2.52	6.95×3.58×2.55	7.95×4.10×2.90	8.95×4.62×3.24
Dimensions of test product (m)	0.70×0.70×0.38	0.85×0.85×0.45	1.00×1.00×0.50	1.15×1.15×0.60
Max. input power (w)	1000 W	1000 W	1000 W	1000 W

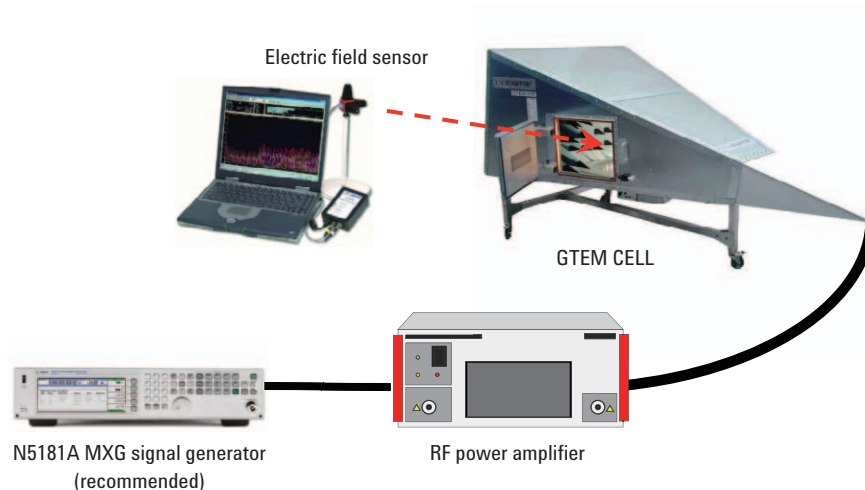
Connection diagram for radiant emission measurement



Standard components

Model	Equipment
GTEM CELL	
EP5/ME	Simplified EMI measurement software
N9010A EXA	Signal analyzer (9 k-3 GHz)
310N	Preamplifier
	Computer, a set of cables (RF, GPIB)

Connection diagram for radiated immunity test



Standard components

Model	Equipment
GTEM CELL	
IM5/RS	Radiated immunity test software
N5181A	Signal generator (100 k-3 GHz)
	Power amplifier
	Electric field sensor
	Computer, a set of cables (RF, GPIB)

Common Mode Noise Measurement System TS1000



Easy noise suppression achieved in common mode noise measurement

Overview

TOYO's savvy has made it possible to attain the accuracy of common mode noise measurement closest to that of spurious noise measurement in a radio anechoic room, using the Workbench Faraday Cage (IEC61967-5), an EMC performance assessment method of a semiconductor. Sporting reproducibility superior to conventional measurements in a radio anechoic room, our TS1000 is effective in EMI control during the product development stage.

Features

- Unsusceptible to radiated noise, delivering high data reproducibility.
- Capable of measurements in a low-noise floor level.
- Speedy, fuss-free measurements as compared with noise measurements in a radio anechoic room
- Allows common mode noise measurements in any office environments.

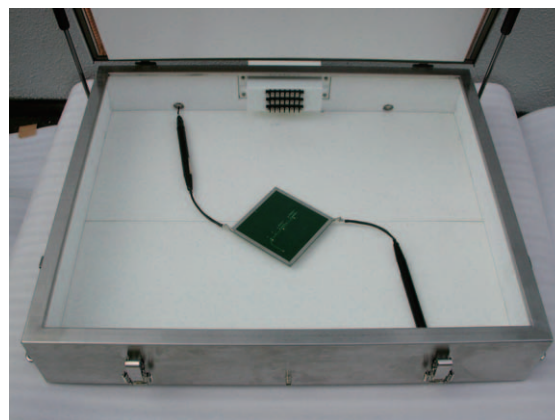
Applications

- Radiant emission measurement

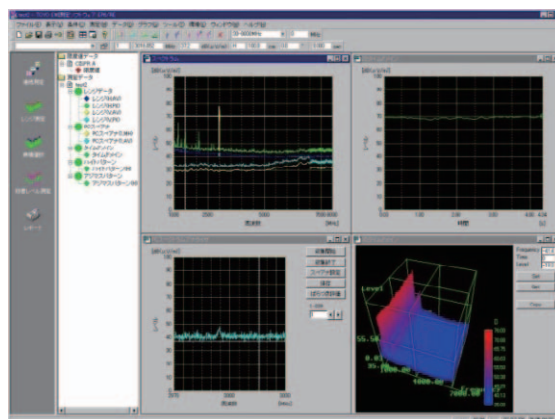
FC-1000 Main Specifications

- Measuring frequency range: 30-1000MHz
- Max. outer dimensions: 950mm (L) × 780mm (w) × 220mm (H)
- Weight: 29.2kg
- I/O voltage range: -48-48VDC
- I/O current range: 0-2ADC
- Number of power input terminals: 6 systems
- Number of signal I/O terminals: 3 systems

* No AC input and output enabled



Inside of FC-1000

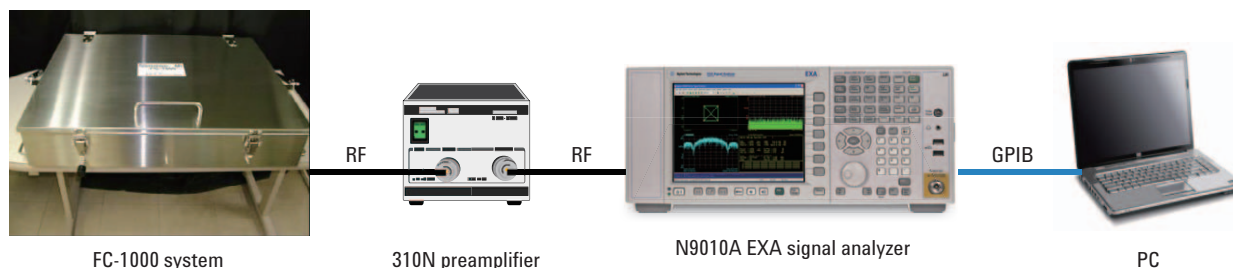


EP6/FC Faraday gauge measurement software

Standard components

Model	Equipment
FC-1000	Faraday cage
EP6/FC	Faraday cage measurement software
N9010A EXA	Signal analyzer (9 k-3.6 GHz)
310N	Preamplifier
	Computer, a set of cables (RF, GPIB)

Connection diagram



Radiated/Conducted Immunity Test System

- Compliant with international and company standards -

Immunity test system best suited to customer needs

Overview

TOYO offers a valuable test system to assess electromagnetic interference in electronic equipment. Installed with Radiated Immunity Test Software IM5, our immunity test system automatically controls the signal generator, power amplifier system, electric field sensor, power meter and antenna mast. It also supports outputting and saving of test results.

Basic measurement functions

- Electric field uniformity measurement
- System linearity testing
- Electric field reference measurement/ Electric field check
- Immunity test
- Display of measured results
- Report generation

Software

- IM5/RS type: Radiated immunity test software
- IM5/CS type: Conducted immunity test software
- VI5/RS type: Vehicle radiated immunity test software

Applicable standards

Consumer product standards

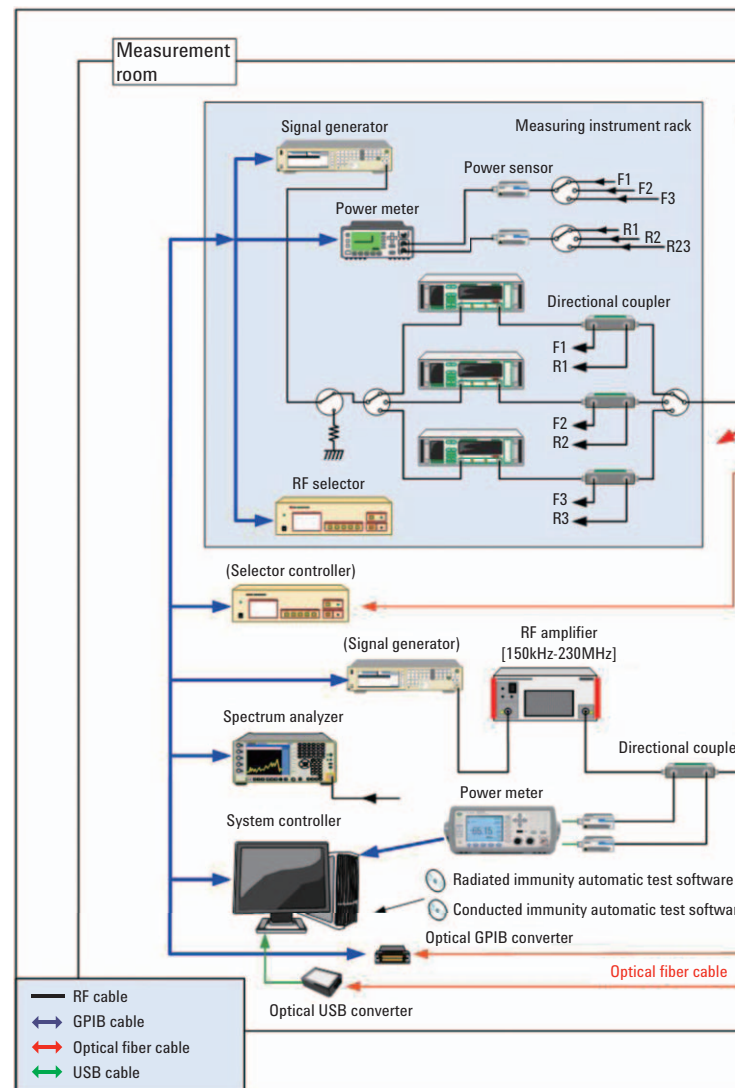
- IEC61000-4-3,6
- CISPR24
- EN

Automotive standards

- 2004/104/EC
- ISO11452-1/2
- SAE
- JASO
- GM/Ford standards (radar pulse)
- Standards in other auto manufacturers

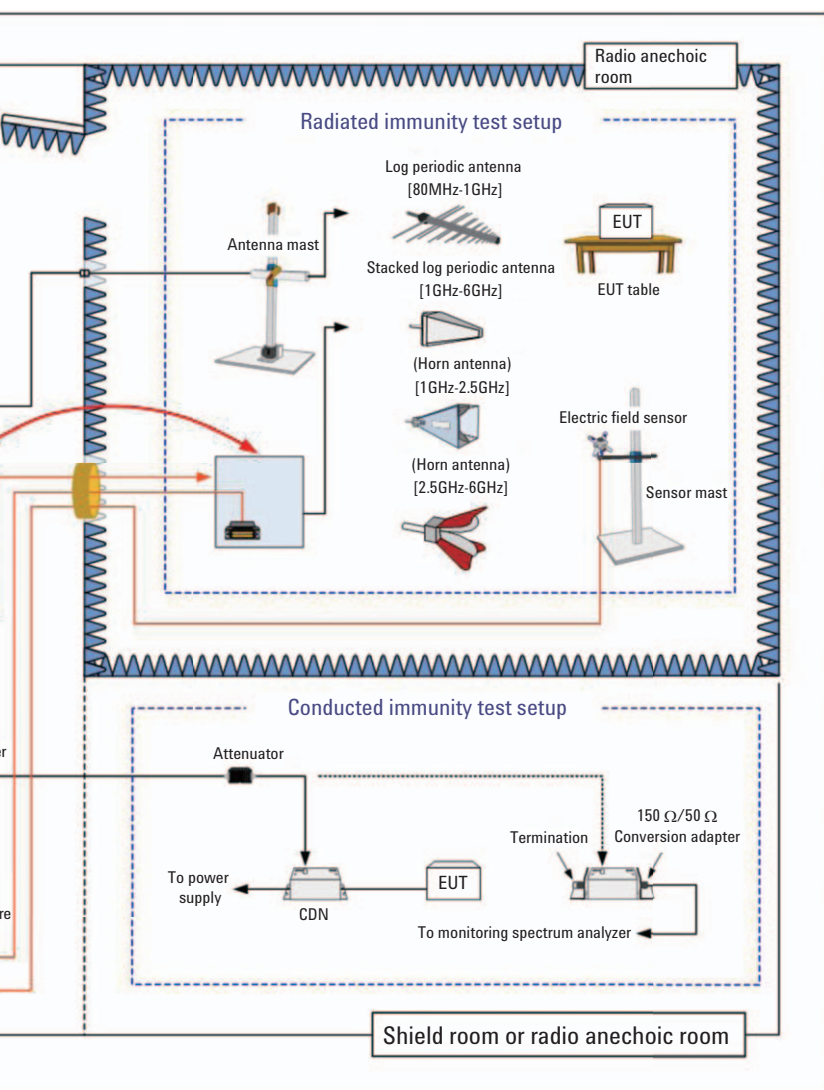
MIL standards

Standards for medical devices



N5181A/ N5183A
MXG signal generator

Immunity Measurement System TS5000/6000 Series



RF power amplifier TA series (10 kW/5 kW)

RF power amplifier TA series is a solid state (semi-conductor device)-laden high power amplifier, delivering output linearity and stability as fundamental performance. TA series is designed for high reliability and quality.

Features

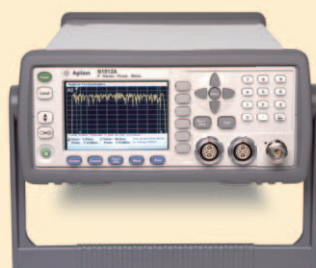
- 10 kW of high power output (7 kW@1 dB comp.)
- Easy maintainability through RF unit replacement
- Equipped with the internal data storage function which is capable of easy cause analysis of a malfunction.

Specifications

Model	Frequency	Output
TA0112-10K	10 k-100 MHz	10 kW
	100 M-225 MHz	6 k-10 kW
TA0112-5K	10 k-50 MHz	5 kW
	50 M-200 MHz	4 k-5 kW



TA0112-10k



P Series Power Meter
N1912A

Recommended power meters



EPM Series Power Meter
N1914A

Oscilloscope for Immunity Pulse Waveform Observation



Software-controlled instantaneous waveform check

Overview

The IEC-defined immunity standards provides for a pulse shape check in calibration and daily inspection. ESD waveforms which have the quick leading edge of sporadic pulse especially require the utilization of a wide band oscilloscope.

Features

- Designed to meet a sample speed and frequency band
- Software-controlled automatic waveform measurement and report generation

Applications

- Waveform calibration and daily inspection

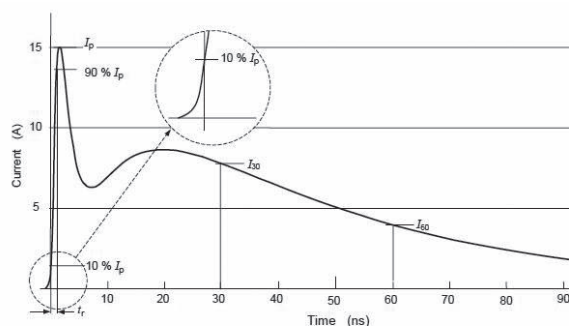


TESEQ Model NSG437

Discharge voltage 200 V-30 kV (IEC61000-4-2-compatible)

Standard components

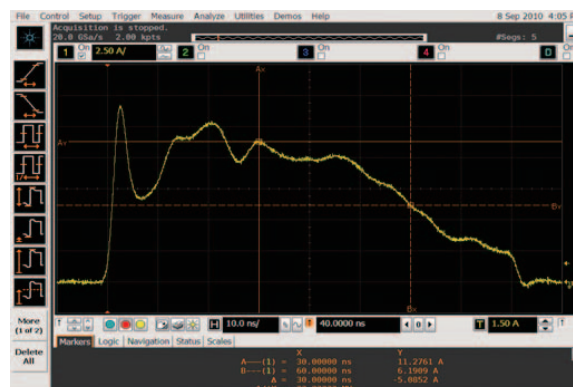
Model	Equipment
MS09000 Series	Oscilloscope
MD103	ESD waveform observation target (IEC61000-4-2)
CAS3025	EFT/ burst observation attenuator (IEC61000-4-4)
MD200	Surge waveform observation probe (IEC61000-4-5)
MD300	Surge waveform observation probe (IEC61000-4-5)



Recommended oscilloscope



MS09000 Series oscilloscope



ESD oscilloscope waveform

SVSWR Measurement System



Network analyzer delivering high-speed SVSWR measurement!!

Overview

With 1-6 GHz radiant emission measurement defined by EN55022 and VCCI standards as of October 1, 2011, a radio anechoic room and test site for EMC must meet all the requirements of NSA regulation (max. 1 GHz) and SVSWR regulation (min. 1 GHz).

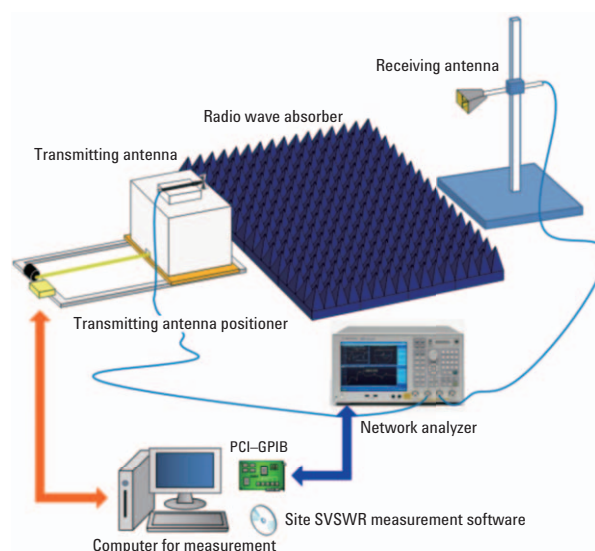
This system is useful to dramatically accelerate test site measurement.

Features

- Equipped with the network analyzer and positioner that offer enhanced speed.
- Strong lineup of antennas

Applications

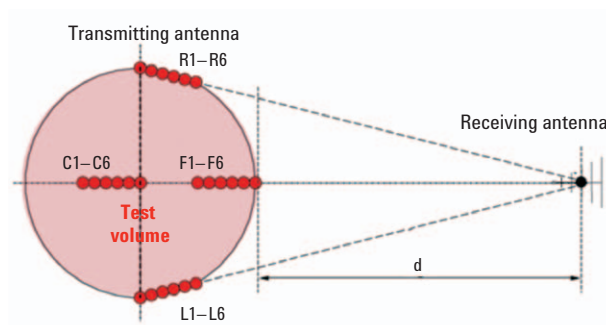
- Radio anechoic room measurement (min. 1 GHz)



SVSWR measurement system

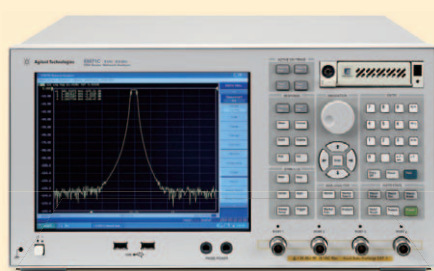
Standard components

Model	Equipment
PP700	Antenna positioner, software
E5071C	ENA network analyzer
3183	Transmitting antenna (1 G-18 GHz)
	Computer, a set of cables (RF, GPIB)



Measurement position

Recommended network analyzer



E5071C ENA network analyzer



ETS Lindgren 3183 (1-18 GHz)

About Agilent Technologies

Agilent Technologies is the world's largest company that designs and manufactures measurement instruments and equipment while focusing on communication, electronics, life science and chemical analysis markets. Operating in over 100 countries, Agilent has expanded availability with a staff of 18,700 worldwide and sales stood at around \$6.6 billion (¥500 billion) in October 2011.

Company History Timeline

- 1939** Hewlett-Packard Company (HP) founded in Silicon Valley, California, by Bill Hewlett and Dave Packard
Audio oscillator invented and ordered to be used in the production of the Disney movie "Fantasia"
- 1943** Signal generators developed. HP enters the microwave field.
- 1951** Frequency counter developed.
- 1960** Sampling oscilloscope developed.
- 1963** Incorporated enterprise "Yokogawa Hewlett-Packard" formed in Japan.
- 1964** Cesium-beam atomic clock developed.
- 1970** Microwave network analyzer developed.
- 1973** Logic analyzer developed.
- 1974** The electronics industry adopts the HP-IB (GPIB) interface as an international standard.
- 1982** HP receives Deming Prize (Quality Control Award) in Japan.
- 1983** Semiconductor parametric test system introduced in Japan.
- 1992** Optical spectrum analyzer developed.
- 1999** HP announces strategic realignment to demerge the Computer Division and Measurement Division, and the measurement company launches operations as Agilent Technologies. Initial public stock raises \$2.1 billion and breaks records as the largest IPO in Silicon Valley history.
- 2009** Agilent Technologies celebrates 10th anniversary and 70th anniversary of HP foundation.

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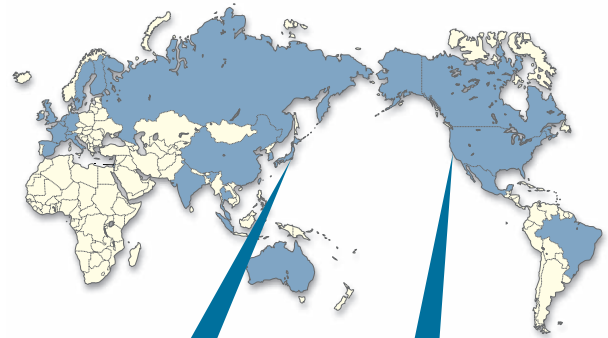


Audio Oscillator (1939)



In 1939 HP was formed in this small garage. The iconic garage is designated as California State Historical Building #976 for the "cradle of Silicon Valley".

Brazil, Canada, Mexico, Puerto Rico, United States, Australia, China, Hong Kong, India, Korea, Malaysia, Singapore, Thailand, Taiwan, Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Ireland, Israel, Italy, Netherlands, Russia, Sweden, Japan



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